

Timothy J. Regan
Senior Vice President
Government Affairs

Corning Incorporated
1350 I Street NW
Suite 500
Washington, DC 20005

t 202 682 3140
f 202 682 3130
regantj@corning.com

www.corning.com

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February 28, 2002

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Mr. William F. Caton, Acting Secretary
Federal Communications Commission
Office of the Secretary
445-12th Street SW
Washington, DC 20554



Re: Corning Incorporated Comments in the Matter of Review of
Dominant versus Non-dominant Telecommunication Services
(CC Docket No. 01-337)

Dear Mr. Caton:

Pursuant to FCC's request for comments, Corning Incorporated hereby submits an original and nine (9) copies of its Comments in the above-referenced proceeding. Please circulate a copy of the comments to each Commissioner. I have also included a diskette for the Commission's use in storing and transmitting the Comments electronically.

Questions regarding the materials enclosed herewith can be directed to the undersigned at 202-682-3200.

Sincerely,


Timothy J. Regan

Enclosures

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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FEB 28 2002
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
Review of Dominant versus)
Non-dominant Telecommunication)
Services)

CC Docket No. 01-337

COMMENTS OF CORNING INCORPORATED

Timothy J. Regan

Corning Incorporated
1350 I Street NW, Suite 500
Washington, DC 20005
(202) 682-3200 (tel)
(202) 682-3130 (fax)

February 28, 2002

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

| | | |
|--------------------------------|---|----------------------|
| In the Matter of |) | |
| |) | |
| Review of Dominant versus |) | CC Docket No. 01-337 |
| Non-dominant Telecommunication |) | |
| Services |) | |

COMMENTS OF CORNING INCORPORATED

I. EXECUTIVE SUMMARY

1. The Commission has an obligation under Section 706 of the 1996 Telecom Act to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability. Fiber to the home ("FTTH") is technology that falls clearly within the definition of advanced telecommunications capability.

2. FTTH is not being deployed in any commercially significant way despite the fact that it is at cost parity with copper-based technology for new builds and total rehabs. Regulation is a significant barrier to investment in FTTH technology, as witnessed by statements by ILEC officials and by the Commission's own experience with video dial tone and open video systems.

3. To remove these barriers as required by Section 706, Corning supports a determination by the Commission that ILEC-provided broadband service is non-dominant. However, if the Commission were to decide not to pursue such general relief, Corning believes that, at a minimum, the Commission should decide that broadband service delivered over FTTH

or other fiber-based networks is non-dominant. Such a determination is justified because the ILECs, as new entrants, cannot exercise market power in the provision of such service. It would also help fulfill the Commission's mandate under Section 706.

II. INTRODUCTION

4. These comments are being submitted by Corning Incorporated (hereafter referred to as Corning) in response to the *Notice of Proposed Rulemaking* in the above-captioned proceeding.¹ Corning is the inventor of optical fiber and the largest manufacturer of optical fiber, optical cable, and photonic components used in telecommunications systems. From our experience in the marketplace, we have observed that investment in fiber optic systems to provide local access by incumbent local exchange carriers ("ILECs") is being inhibited by regulation that is subject to review in this proceeding. The Commission should, and indeed, must, take action to remove these regulatory barriers.

III. THE FCC HAS A SECTION 706 MANDATE TO ENCOURAGE DEPLOYMENT OF FTTH, BUT ILEC DEPLOYMENT IS STALLED.

5. The Commission has an obligation under Section 706 to "...encourage the deployment on a reasonable and timely basis of advanced telecommunications capability..."² "Advanced telecommunications capability" is defined by statute as "broadband" capability that can deliver voice, data, and video bi-directionally. Specifically, the statutory definition states:

¹ *Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, FCC 01-360, CC Docket No. 01-337 (released December 20, 2001) ("NPRM").

² Section 706(a) of the Telecommunications Act of 1996, Pub. L. 104-104, 110 Stat. 56 (1996), reproduced in the notes under 47 U.S.C. § 157 ("Section 706").

“The term ‘advanced telecommunications capability’ is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.”³

FTTH meets this definition of advanced telecommunications capability because it is uniquely designed to transmit voice, data, and video bi-directionally. Thus, Section 706 gives the Commission a mandate to take action to encourage FTTH deployment.

6. FTTH is not being deployed in any commercially significant fashion throughout the country. As indicated in Exhibit 1, which lists all of the FTTH deployments throughout the country, the level of deployment in 2001 at 16,970 homes is not substantial.⁴ The deployments that have occurred are largely in small communities and developments, and the providers have largely been real estate developers, competitive local exchange carriers (“CLECs”), and municipalities. The ILECs simply have not made a commitment to widespread deployment, even in “new build” situations where the technology proves out as a competitive alternative to copper.

7. Cost of the equipment is not a major factor discouraging deployment. As indicated in Exhibit 2, an affidavit originally filed by Corning last October on behalf of Paceon in the Commission’s 706 proceeding,⁵ copper and fiber-based technologies are at cost parity today. According to Paceon, a passive optical network delivering 155 mbps to the home can be deployed for \$1,956.00 per home served versus \$2,111.00 per home served for a copper-based

³ Section 706(c)(1) of the 1996 Act.

⁴ See *Optical Access: Next Generation Technology and Services in the First Mile*, Communications Industry Researchers, Inc., p. 188 (September 1, 2001).

⁵ See Reply Comments of Corning Incorporated, CC Docket No. 98-146, filed Oct. 9, 2001, at Exhibit 1.

DSL network delivering 1.5 mbps. In other words, these data show that an ILEC can deliver 100 times more capacity over a fiber network for the same price as a copper network.

IV. REGULATION HAS BEEN A SIGNIFICANT BARRIER TO ILEC INVESTMENT IN FTTH SYSTEMS.

8. Regulation has inhibited investment in FTTH systems by the ILEC community. ILEC representatives have given testimony to this reality. SBC's Executive Vice President for Services, Ross Ireland, has stated publicly that deployment of the optical network in SBC's region will be affected by "regulatory judgments."⁶

9. The Commission's experience with video dial tone demonstrates how regulation inhibits investment in FTTH and other video capable systems. In 1992, the FCC initiated video dial tone to encourage the deployment of fiber to the home and other technologies to deliver integrated voice, data, and video service.⁷ Unfortunately, despite the FCC's leadership, video dial tone failed. The Section 214, tariffing, and cost allocation requirements led to industry conflict. Even Congress recognized the problem associated with Section 214 regulation. It decided not to require Section 214 authorization of telephone companies that deploy open video systems because this requirement has served as an obstacle to competitive entry and has disproportionately disadvantaged new competitors.⁸ So, despite its good intentions, the Commission was stymied by its own rules in implementing video dial tone. As a result, the initiative died.

⁶ Liane H. LaBarba, *Pronto, part deux*, TELEPHONY at p. 14-15 (May 14, 2001).

⁷ See *Telephone Company-Cable Cross-Ownership Rules*, Sections 63.54-63.58, Second Report and Order, Recommendation to Congress, and Second Further Notice of Proposed Rulemaking, 7 FCC Rcd 5781, 5790-91 (1992).

⁸ Joint Explanatory Statement of the Committee of Conference regarding the Telecommunications Act of 1996, at 57.

10. Similarly, the open video systems provision of the 1996 Telecom Act⁹ was adopted to facilitate ILEC entry into video programming, and thus to stimulate deployment of FTTH and other technologies designed to deliver video. This provision has not been utilized in any significant way, especially by the ILECs. The cost allocation rules employed by the Commission have discouraged ILEC investment in such systems.

V. ILEC-PROVIDED BROADBAND SERVICE SHOULD BE DEEMED NON-DOMINANT.

11. Corning supports a determination that ILEC-provided broadband service is non-dominant. Such a decision would eliminate some of the barriers as described above that have inhibited deployment of FTTH and other fiber-based architectures. Other regulatory barriers such as unbundling and resale at discount rates are also inhibiting investment, but these should be dealt with in the context of the UNE Triennial Review¹⁰ and the Broadband Framework¹¹ proceedings.

12. If the Commission decides not to grant such general relief, it should, at a minimum, determine that ILEC-provided broadband service delivered over FTTH and other fiber-based networks is non-dominant. Such service should be deemed non-dominant for three reasons. First, as demonstrated above, such service has not been deployed in any commercially significant way. Second, the ILECs would be providing it as new entrants who are unable to exercise

⁹ 47 U.S.C. § 573 (1999).

¹⁰ *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, Notice of Proposed Rulemaking, FCC 01-361, CC Docket No. 01-339 (rel. Dec. 20, 2001).

¹¹ *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Notice of Proposed Rulemaking, FCC 02-42, CC Docket No. 02-33 (released Feb. 15, 2002).

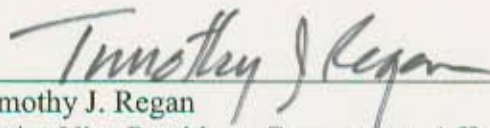
market power. And third, declaring such service as non-dominant will help fulfill the FCC's Section 706 obligation to encourage deployment of advanced telecommunications capability.

VI. CONCLUSION

13. The Commission has an obligation under Section 706 to encourage deployment of FTTH and other fiber-based systems. Deployment of such capability is being inhibited today by regulation. In this proceeding, the Commission should reduce some of this regulation by declaring ILEC-provided broadband service to be non-dominant. However, if the Commission decides not to grant such general relief, it should, at a minimum, decide that ILEC provision of broadband service over FTTH and other fiber-based systems is a non-dominant service.

Respectfully submitted,

CORNING INCORPORATED

A handwritten signature in dark ink, reading "Timothy J. Regan", is written over a horizontal line.

Timothy J. Regan
Senior Vice President, Government Affairs
Corning Incorporated
1350 I Street NW, Suite 500
Washington, DC 20005
(tel) 202-682-3200

EXHIBIT 2

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

| | | |
|---|---|----------------------|
| In the Matter of |) | |
| |) | |
| Inquiry Concerning the Deployment of |) | CC Docket No. 98-146 |
| Advanced Telecommunications |) | |
| Capability to All Americans in a Reasonable |) | |
| and Timely Fashion, and Possible Steps |) | |
| to Accelerate Such Deployment |) | |
| Pursuant to Section 706 of the |) | |
| Telecommunications Act of 1996 |) | |

DECLARATION OF WILLIAM SHANK

My name is William Shank. I am the Vice President of Sales and Marketing for Paceon Corporation. Under my direction is Bart Alvarez, Director of Business Development and Marketing. His duties involve analyzing market developments for the local access portion of the telephone networks, developing unique solutions and architectures for the delivery of broadband capability to small business and residential end users, and developing and implementing marketing plans to promote deployment of Paceon solutions for local access.

Paceon is a business group owned by Mitsubishi Electric of Japan. It is located near Atlanta in Duluth, Georgia. It brings electronics expertise of Mitsubishi Electric to the U.S. telecommunications market. Paceon has developed a suite of products to bring fiber-based broadband communications systems to both business and residential users.

Paceon's technology is built around the passive optical network ("PON"). This architectural approach allows the carrier to share the last mile of optical fiber among multiple customers, thereby reducing costs. PON essentially moves the last mile from a point-to-point connection to a point-to-multipoint connection. The technology is based on an existing ITU standard, ITU 983, as described in Attachment A.

EXHIBIT 2

Paceon's PON architecture is highly reliable in that it utilizes a passive optical connection from the central office through a passive optical splitter to every customer. No field electronics are deployed in the system, thus removing points of vulnerability from the system.

Paceon's PON system is ATM based and is, therefore, capable of handling multiple services including POTs, ISDN, cable TV, video on demand, LAN interconnection, video conferencing, just to name a few. In short, our PON system meets all of the requirements of the present day subscribers. To accommodate all these services, Paceon's PON system transmits 155 mbps downstream to a splitter, which delivers the bit stream to 32 homes over a fiber connection. In this sense, the 155 mbps is shared using encryption technology to ensure the privacy and security of individual users. The system gives each home 4 mbps in upstream capacity.

The Paceon system has the following principal components. An Optical Line Terminator ("OLT"), which serves the function of switching and multiplexing and is located at or near the central office. The Optical Distribution Network ("ODN"), which consists of the fibers, the splices, the connectors, and the splitters that connect the OLT to the customer's premise. The Optical Network Terminator ("ONT"), which is the optical network adapter that is located at the customer's premise.

Based on our understanding of other technology price points, Paceon's PON can be deployed in new build and total rehab situations for the same cost as a copper-based DSL solution. As shown on Attachment B, PON can be delivered for \$652 per service versus \$737 for the present method of operation ("PMO"). The PMO is a DSL service and these cost calculations are the first installed cost for deployment.

In the standard deployment, carriers would deliver three services, two 64 kbps voice channels and an IP data service. In the case of the PMO, or DSL service, the IP data service would be

EXHIBIT 2

1.5 mbps downstream and 750 kbps upstream. With PON, the IP data service would be 155 mbps shared dynamically among 32 homes and 4mbps upstream for each home.

In light of the fact that the standard deployment is for three services, the cost comparison is 2,211 per subscriber for the PMO (DSL) case and 1,956 per subscriber for PON case. These calculations assume a deployment in a neighborhood of 10,000 homes and an 80% take rate for the service.

/s/ William Shank
VP, Sales and Marketing
Paceon Corporation

EXHIBIT 1

| Fiber-to-the-Home Residences | | | | | |
|-------------------------------|---------------|---------------|---------------|----------------|----------------|
| | 2001 | 2002 | 2003 | 2004 | 2005 |
| Verizon Region | | | | | |
| Delivered through: | | | | | |
| New Home Developments | 505 | 1,061 | 2,227 | 4,677 | 9,821 |
| Independents/Municipalities | - | 380 | 798 | 1,676 | 3,519 |
| Other/ILEC/MSO/Existing Homes | 1,250 | 1,750 | 1,750 | 1,750 | 1,750 |
| Total | 1,755 | 3,191 | 4,775 | 8,103 | 15,090 |
| SBC Region | | | | | |
| Delivered through: | | | | | |
| New Home Developments | 2,000 | 4,000 | 6,000 | 8,000 | 12,500 |
| Independents/Municipalities | 4,500 | 9,450 | 19,845 | 41,675 | 87,516 |
| Other/ILEC/MSO/Existing Homes | 500 | 650 | 760 | 965 | 1,105 |
| Total | 7,000 | 14,100 | 26,605 | 50,640 | 101,121 |
| BeilSouth Region | | | | | |
| Delivered through: | | | | | |
| New Home Developments | 565 | 1,250 | 2,875 | 6,613 | 15,209 |
| Independents/Municipalities | - | 300 | 363 | 435 | 508 |
| Other/ILEC/MSO/Existing Homes | 400 | 800 | 1,450 | 2,105 | 3,050 |
| Total | 965 | 2,350 | 4,688 | 9,153 | 18,767 |
| Qwest Region | | | | | |
| Delivered through: | | | | | |
| New Home Developments | - | 350 | 770 | 1,694 | 3,727 |
| Independents/Municipalities | 7,050 | 14,805 | 31,091 | 65,290 | 137,109 |
| Other/ILEC/MSO/Existing Homes | 200 | 300 | 700 | 1,215 | 2,025 |
| Total | 7,250 | 15,455 | 32,561 | 68,199 | 142,861 |
| Total Market: | | | | | |
| New Home Developments | 3,070 | 6,661 | 11,872 | 20,983 | 41,257 |
| Independents/Municipalities | 11,550 | 24,935 | 52,097 | 109,075 | 228,653 |
| Other/ILEC/MSO/Existing Homes | 2,350 | 3,500 | 4,660 | 6,035 | 7,930 |
| TOTAL HOMES | 16,970 | 35,096 | 68,629 | 136,094 | 277,840 |

Exhibit 2

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Inquiry Concerning the Deployment of
Advanced Telecommunications
Capability to All Americans in a Reasonable
and Timely Fashion, and Possible Steps
to Accelerate Such Deployment
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CC Docket No. 98-146

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Exhibit 2

multipoint connection. The technology is based on an existing ITU standard, ITU 983, as described in Attachment A.

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William Shank
VP Sales & Marketing
Paceon Corporation

paceon
Innovative Access

Outline of ATM-PON System Specifications (G.983.1)

The diagram illustrates a Passive Optical Network (PON) architecture. At the top right, a box labeled "Central Office" contains an "OLT" (Optical Line Termination) unit. A "Maximum length: 20 km" dimension line spans the distance from the OLT to the network termination points. The optical path is labeled "Optical loss range (class B: 10-25dB, class C: 15-30dB)" and "155.52/622.08 Mbit/s (1.5um wavelength)". An "Optical splitter" is shown in the middle of the path. On the left, the "FTTH" (Fiber To The Home) configuration shows a house icon connected to an "ONT" (Optical Network Termination) unit, with the text "ATM 25M etc." below it. On the right, the "FTTCab" (Fiber To The Cabinet) configuration shows a row of cabinets connected to an "ONU" (Optical Network Unit) via "xDSL" lines. A "Maximum divergence number: 32" is indicated near the splitter. The entire network is connected via "Single mode optical fiber (B.652)".

OLT : Optical Line Termination
 ONT : Optical Network Termination
 NT : Network Termination

| SUMMARY OF CAPITAL EXPENDITURES - Business Model | | | | |
|--|--|--|--------------|--------------|
| | | | PMO | APON |
| Switch Interfaces | | | \$ 1,615,800 | \$ 1,615,800 |
| DLC Central Office Terminals | | | | |
| Integrated Sonet DLC Central Office Terminal | | | \$ 2,806,000 | \$ - |
| Incremental DS1 cost at CO Sonet DLC | | | \$ - | \$ - |
| Incremental DS3 cost at CO Sonet DLC | | | \$ 1,753,750 | \$ - |
| UDLC Central Office Terminal | | | \$ - | \$ 7,500 |
| Total DLC COT/HDT Cost | | | \$ 4,559,750 | \$ 7,500 |
| PON OLT | | | | |
| OLT Chassis and common cards | | | \$ - | \$ 1,104,340 |
| DS3 and DS3 redundant cards cost | | | \$ - | \$ 840,528 |
| OC3 Cards \$ redundant cards cost | | | \$ - | \$ 385,057 |
| APON cards cost | | | \$ - | \$ 3,282,781 |
| Total OLT cost (excluding ONT) | | | \$ - | \$ 5,612,706 |
| Total DCS cost | | | \$ 3,208,552 | \$ 3,586,246 |
| ADSL CO Terminal cost | | | \$ 972,962 | \$ - |
| ATM Cost | | | | |
| Core switch cost | | | \$ 402,500 | \$ - |

PMO is the present method of operation. For business locations this is fiber/DLC

| | | | | |
|--|----|------------|----|------------|
| Total feeder cable cost | \$ | 990,328 | \$ | 317,450 |
| Remote location | | | | |
| Structure cost | \$ | 1,101,750 | \$ | 1,481,250 |
| DLC common electronics equipment (RT) system | \$ | 9,821,000 | \$ | 5,948,713 |
| DLC channel units | \$ | 21,325,905 | \$ | 4,395,000 |
| ONT chassis, common, and battery backup | \$ | - | \$ | 11,850,434 |
| DS1 cards | \$ | - | \$ | 1,601,003 |
| 10/100 baseT cards | \$ | - | \$ | 10,147,379 |
| Splitters | \$ | - | \$ | 527,933 |
| Additional ADM for incremental DS3 service | \$ | 40,250 | \$ | - |
| Total remote terminal | \$ | 32,288,905 | \$ | 35,951,712 |
| Total distribution cable cost | \$ | 563,056 | \$ | 556,338 |
| Total CPE cost | \$ | 7,044,105 | \$ | - |
| Total CAPEX | \$ | 53,859,119 | \$ | 47,647,752 |
| Cost per service | \$ | 737 | \$ | 652 |
| Cost per customer | \$ | 11,583 | \$ | 10,247 |

Base on X locations and X Customers